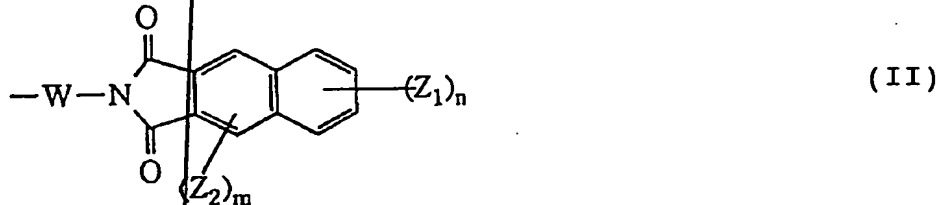
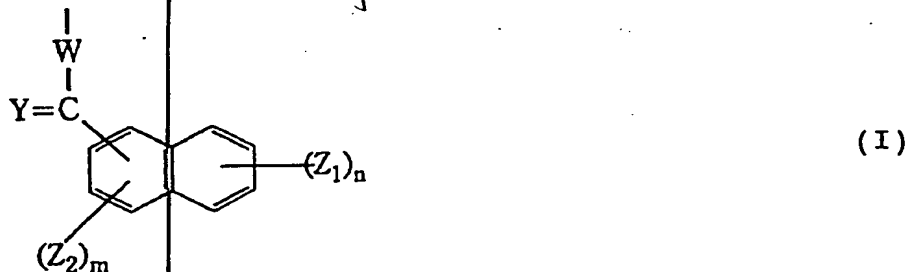


WHAT IS CLAIMED IS:

1. A composition for a bottom anti-reflective coating material, comprising a polymer compound having a structure represented by the following formula (I) or (II) on the side chain:



wherein W represents a linking group to the polymer main chain, Y represents an oxygen atom, a sulfur atom or =N-V, Z_1 and Z_2 , which may be the same or different, each represents an electron donating group, m and n represent an integer of from 0 to 2 and from 0 to 3, respectively, and when m and n each is 2 or 3, the Z_1 groups or the Z_2 groups may be the same or different, and V represents -OH, -NH₂, a linear, branched or cyclic alkyl group having from 1 to 20 carbon

atoms where the alkyl group may have a substituent, an aromatic or heteroaromatic ring group having from 5 to 14 carbon atoms, which may have a substituent, or an alkoxy group having from 1 to 20 carbon atoms.

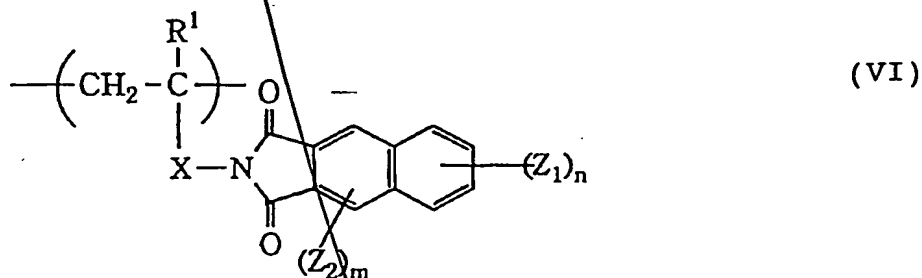
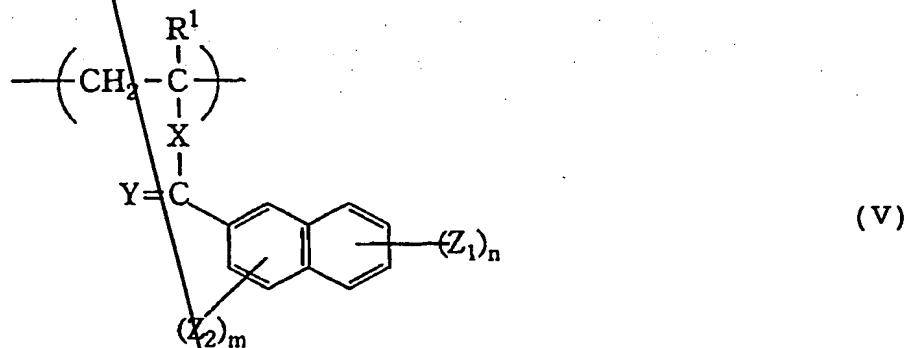
2. A composition for a bottom anti-reflective coating material, comprising a polymer compound having a structure represented by the following formula (III) or (IV) as a part of the repeating unit on the main or side chain:



wherein Y represents an oxygen atom, a sulfur atom or =N-V, Z_1 and Z_2 , which may be the same or different, each represents an electron donating group, m and n represent an

integer of from 0 to 2 and from 0 to 3, respectively, and when m and n each is 2 or 3, the Z₁ groups or the Z₂ groups may be the same or different, and V represents -OH, -NH₂, a linear, branched or cyclic alkyl group having from 1 to 20 carbon atoms wherein the alkyl group may have a substituent, an aromatic or heteroaromatic ring group having from 5 to 14 carbon atoms, which may have a substituent, or an alkoxy group having from 1 to 20 carbon atoms.

3. A composition for a bottom anti-reflective coating material, comprising a polymer compound having a repeating unit of the structure represented by formula (V) or (VI):



wherein R^1 represents a hydrogen atom, a methyl group, a chlorine atom, a bromine atom or a cyano group, X represents a divalent linking group, Y, Z_1 , Z_2 , m and n have the same meanings as defined in claim 1, and when m and n each is 2 or 3, the Z_1 groups or the Z_2 groups may be the same or different.

4. A composition for a bottom anti-reflective coating material as claimed in claim 3, wherein in formula (V) or (VI), Z_1 and Z_2 each is a group selected from -OH, -OR⁴, -NR⁵R⁶ and -SR⁴ wherein R⁴ represents a hydrocarbon group having from 1 to 20 carbon atoms, and R⁵ and R⁶, which may be the same or different, each represents a hydrogen atom or a hydrocarbon group having from 1 to 20 carbon atoms.

5. A composition for a bottom anti-reflective coating material, comprising the following components (a) and (b):

(a) a polymer compound having a structure represented by formula (I) or (II) described in claim 1; and

(b) a melamine, guanamine, glycoluril or urea compound substituted by at least one substituent selected from a methylol group, an alkoxymethyl group and an acyloxymethyl group.

6. A composition for a bottom anti-reflective coating material as claimed in claim 5, wherein in formula (I) or (II), W is a single bond or a linking group containing

a group selected from an alkylene group which may have a substituent, an arylene group which may have a substituent and an aralkylene group which may have a substituent wherein W may have one or more of -CO₂-, -CONH-, -O-, -CO- and -SO₂- in the middle thereof, and Z₁ and Z₂ each is a group selected from -OH, -OR⁴, -SR⁴ and -NR⁵R⁶ wherein R⁴ represents a hydrocarbon group having from 1 to 20 carbon atoms, and R⁵ and R⁶, which may be the same or different, each represents a hydrogen atom or a hydrocarbon group having from 1 to 20 carbon atoms, and when m and n each is 2 or 3, the Z₁ groups or the Z₂ groups may be the same or different.

7. A composition for a bottom anti-reflective coating material comprising the following components (a) and (c):

(a) a polymer compound having a structure represented by formula (I) or (II) described in claim 1; and

(c) a phenol, naphthol or hydroxyanthracene compound substituted by two or more groups selected from a methylol group, an alkoxymethyl group and an acyloxymethyl group.

8. A composition for a bottom anti-reflective coating material as claimed in claim 7, wherein in formula (I) or (II), W is a single bond or a linking group containing a group selected from an alkylene group which may have a substituent, an arylene group which may have a substituent

and an aralkylene group which may have a substituent wherein W may have one or more of $-\text{CO}_2-$, $-\text{CONH}-$, $-\text{O}-$, $-\text{CO}-$ and $-\text{SO}_2-$ in the middle thereof, and Z_1 and Z_2 each is a group selected from $-\text{OH}$, $-\text{OR}^4$, $-\text{SR}^4$ and $-\text{NR}^5\text{R}^6$ wherein R^4 represents a hydrocarbon group having from 1 to 20 carbon atoms, and R^5 and R^6 , which may be the same or different, each represents a hydrogen atom or a hydrocarbon group having from 1 to 20 carbon atoms, and when m and n each is 2 or 3, the Z_1 groups or the Z_2 groups may be the same or different.

9. A composition for a bottom anti-reflective coating material as claimed in claim 1, wherein the polymer compound having a structure represented by formula (I) or (II) contains from 2 to 50 wt% of a repeating structural unit represented by the following formula (VII):



wherein R^2 represents a hydrogen atom, a methyl group, a chlorine atom, a bromine atom or a cyano group, and A represents an organic functional group having a $-\text{CH}_2\text{OH}$, $-\text{CH}_2\text{OR}^4$ or $-\text{CH}_2\text{OCOCH}_3$ terminal group wherein R^4 represents a hydrocarbon group having from 1 to 20 carbon atoms.

10. A composition for a bottom anti-reflective coating material as claimed in claim 9, wherein A in formula (VII) is a group resulting from the reaction of $-\text{CONHCH}_2\text{OH}$,

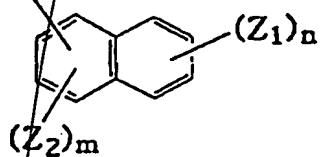
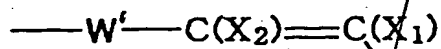
-CONHCH₂OCH₃, -C₆H₄CH₂OH, -C₆H₄CH₂OCH₃ or -CONHC(CH₃)₂CHCOCH₃ with formalin.

11. A composition for a bottom anti-reflective coating material as claimed in claim 1, wherein the polymer compound having a structure represented by formula (I) or (II) contains from 2 to 30 wt% of a repeating structural unit represented by the following formula (VIII):

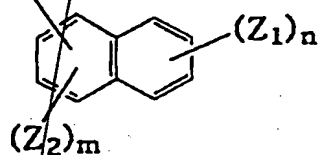
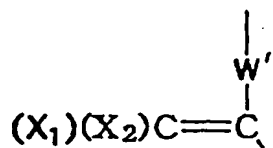


wherein R² has the same meaning as R² in claim 9, and B represents an organic functional group having an epoxy terminal group.

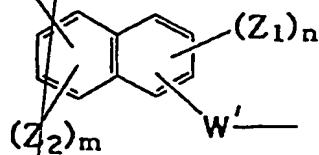
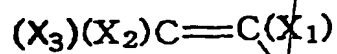
12. A bottom anti-reflective coating material composition comprising a polymer light absorbent having at least one group represented by the following formula (IX), (X), (XI), (XII), (XIII), (XIV) or (XV) on the side chain:



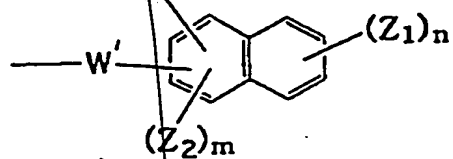
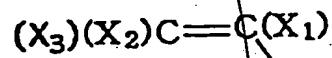
(IX)



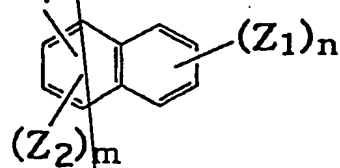
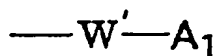
(X)



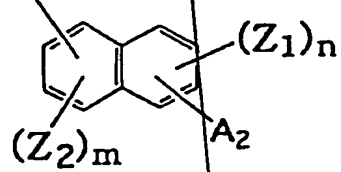
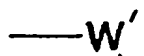
(XI)



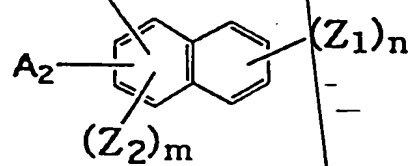
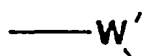
(XII)



(XIII)



(XIV)



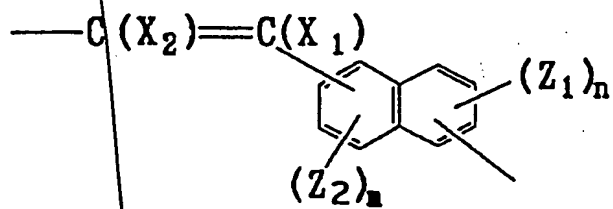
(XV)

wherein W' represents a divalent linking group, X₁ to X₃, which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group or -(X₄)_p-R wherein R represents an alkyl group having from 1 to 20 carbon atoms, an aryl group having from 6 to 20 carbon atoms or an aralkyl group having from 7 to 20 carbon atoms, which may have a substituent, X₄ represents a single bond, -CO₂-, -CONH-, -O-, -CO-, an alkylene group having from 2 to 4 carbon atoms or -SO₂-, p represents an integer of from 1 to 10, Z₁ and Z₂, which may be the same or different, each represents an electron donating group, m and n represent an integer of from 0 to 2 and from 0 to 3, respectively, and when m is 2 or m and n each is 2 or 3, the Z₁ groups or the Z₂ groups may be the same or different, A₁ represents a divalent aromatic ring or heteroaromatic ring group having from 5 to 14 carbon atoms, which may have a substituent, and A₂ represents an aromatic ring or heteroaromatic ring group having from 5 to 14 carbon atoms, which may have a substituent.

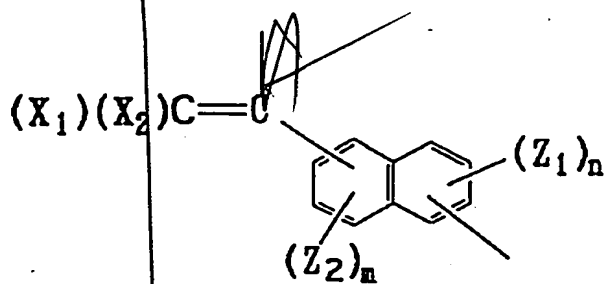
13. A bottom anti-reflective coating material composition comprising a polymer light absorbent having at least one structure represented by the following formula (XVI), (XVII), (XVIII), (XIX), (XX), (XXI), (XXII) or (XXIII) as at least a part of the repeating unit on the main or side chain:

(XVI)

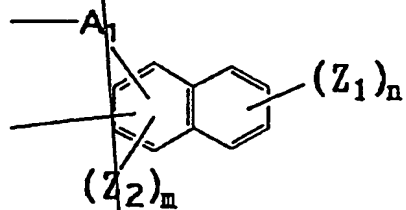




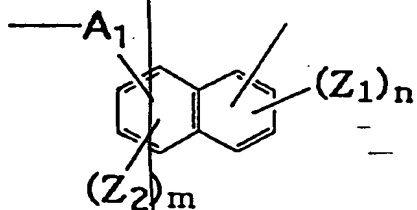
(XVIII)



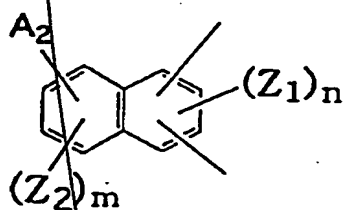
(XIX)



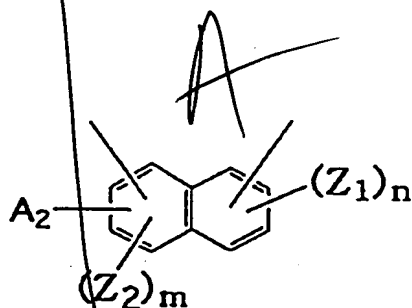
(XX)



(XXI)



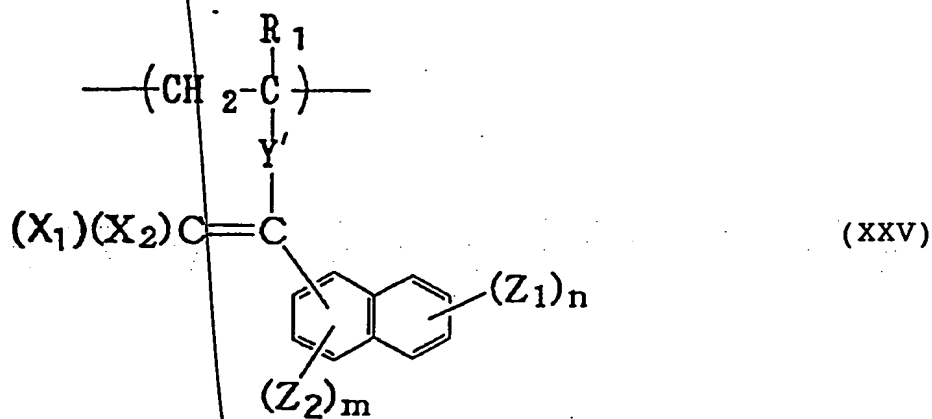
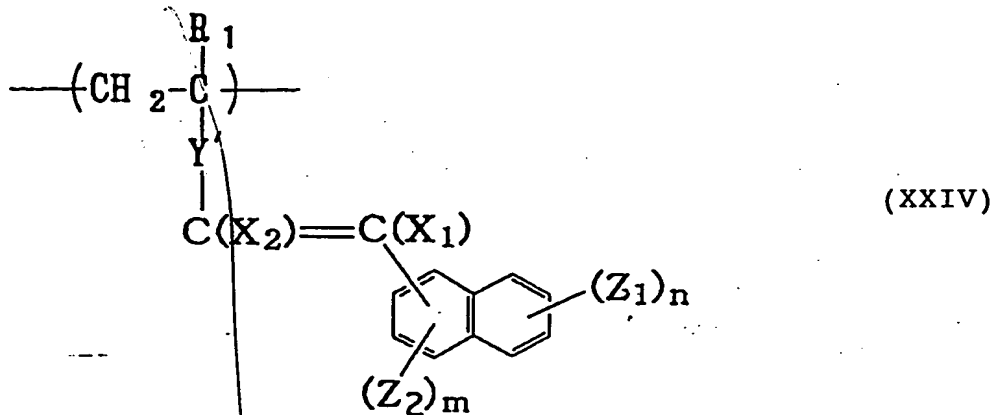
(XXII)



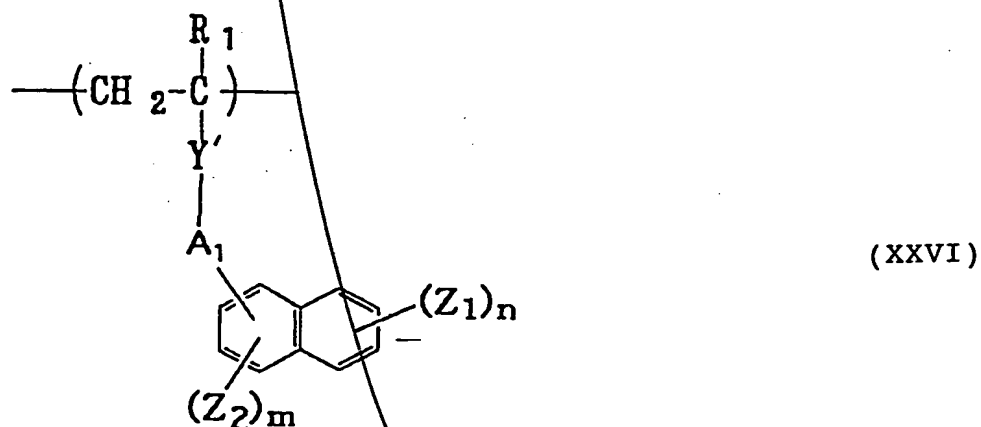
(XXIII)

wherein X_1 to X_3 , Z_1 , Z_2 , A_1 , A_2 , n and m each has the same meaning as defined in claim 12.

14. A bottom anti-reflective coating material composition comprising a polymer light absorbent having at least one repeating structural unit represented by the following formula (XXIV), (XXV) or (XXVI):



【化 18】



wherein R^1 represents a hydrogen atom, a methyl group, a chlorine atom, a bromine atom or a cyano group, Y' represents a divalent linking group, X_1 , X_2 , Z_1 , Z_2 , m , n and A_1 each has the same meaning as in claim 12.

15. A bottom anti-reflective coating material composition as claimed in claim 14, wherein Y' is a single bond, an alkylene, arylene or aralkylene group which may partially have one or more of $-CO_2-$, $-CONH-$, $-O-$, $-CO-$ and $-SO_2-$, or a group represented by $-CO_2-E-$, $-CONH-E-$, $-O-E-$, $-CO-E-$ or $-SO_2-E-$ group wherein E represents a single bond or an aromatic ring group having from 6 to 14 carbon atoms, which may have a substituent.

16. A bottom anti-reflective coating material composition as claimed in claim 12, wherein Z_1 and Z_2 , which may be the same or different, each represents $-OH$, $-OR^4$, $-NR^5R^6$ or $-SR^4$ wherein R^4 represents a hydrocarbon group having from 1 to 20 carbon atoms, and R^5 and R^6 each represents a hydrogen atom or a hydrocarbon group having from 1 to 20 carbon atoms.

17. A bottom anti-reflective coating material composition as claimed in claim 12, wherein A_1 and A_2 each represents a divalent or monovalent group of benzene, naphthalene, anthracene, phenanthrene or thiophene ring, which may have a substituent.

18. A bottom anti-reflective coating material

composition as claimed in claim 12, wherein said polymer light absorbent contains from 2 to 50 wt% of the repeating structural unit represented by the following formula (XXVII):

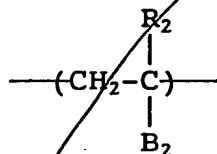


wherein R² represents a hydrogen atom, a methyl group, a chlorine atom, a bromine atom or a cyano group, and B₁ represents an organic functional group having -CH₂OH, -CH₂OR⁷ or -CH₂OCOCH₃ at the terminal wherein R⁷ represents a hydrocarbon group having from 1 to 20 carbon atoms.

19. A bottom anti-reflective coating material composition as claimed in claim 12, wherein said polymer light absorbent contains from 2 to 50 wt% of a repeating structural unit represented by formula (XIX) of claim 18 where B₁ is a group obtained by the reaction of a group represented by -CONHCH₂OH, -CONHCH₂OCH₃, -CH₂OCOCH₃, -C₆H₄(OH)CH₂OH, -C₆H₄(OH)CH₂OCH₃ or -CONHC(CH₃)₂CH₂COCH₃, with formalin.

sub C1

20. A bottom anti-reflective coating material composition as claimed in claim 12, wherein said polymer light absorbent contains from 2 to 30 wt% of a repeating structural unit represented by the following formula (XXVIII):



(XXVIII)

wherein R² represents a hydrogen atom, a methyl group, a chlorine atom, a bromine atom or a cyano group, and B₂ represents an organic functional group having an epoxy terminal group.

21. A bottom anti-reflective coating material composition comprising the following components (a) and (b):

(a) a polymer light absorbent claimed in claim 12; and

(b) a melamine, guanamine, glycoluril or urea compound substituted by at least one substituent selected from a methylol group, an alkoxymethyl group and an acyloxymethyl group.

22. A bottom anti-reflective coating material composition comprising the following components (a) and (c):

(a) a polymer light absorbent claimed in claim 12; and

(c) a phenol, naphthol or hydroxyanthracene compound substituted by at least one substituent selected from a methylol group, an alkoxymethyl group and an acyloxymethyl group.

23. A method for forming a resist pattern, which uses a bottom anti-reflective coating material composition

claimed in claim 1.

24. A method for forming a resist pattern, which uses a bottom anti-reflective coating material composition claimed in claim 12.

Sub B1